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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/518,788	12/21/2004	Masakazu Sato	Q83533	9875

23373 7590 08/09/2007  
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SUITE 800  
WASHINGTON, DC 20037

EXAMINER
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MCINTOSH III, TRAVISS C

ART UNIT	PAPER NUMBER
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1623

MAIL DATE	DELIVERY MODE
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08/09/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/518,788

Applicant(s)

SATO ET AL.

Examiner

Traviss C. McIntosh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 16 April 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 14 and 15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 and 16-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 4/16/07.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

The Amendment filed 4/16/2007 has been received, entered into the record, and carefully considered. The following information provided in the amendment affects the instant application by:

Claims 1-2, 4-7, 10-12, 14-15, and 18 have been amended.

Remarks drawn to rejections of Office Action mailed 1/16/2007 include:

Claim objections: which have been overcome by applicant's amendments and have been withdrawn.

112 2<sup>nd</sup> paragraph rejections: which have been overcome by applicant's amendments and have been withdrawn.

102(b) rejection: which has been maintained for reasons of record.

An action on the merits of claims 1-18 is contained herein below. The text of those sections of Title 35, US Code which are not included in this action can be found in a prior Office action.

### ***Election/Restrictions***

Newly amended claims 14-15 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: the claims as amended are now drawn to methods of use, which were not claimed in the claims as originally presented, and are

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considered a different statutory class of invention, and would have been restricted apart from the compound/composition claims if presented earlier.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 14-15 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

#### ***Claim Rejections - 35 USC § 102***

The rejection of claim 18 under 35 U.S.C. 102(b) as being anticipated by Yuasa et al. ("Relative Nucleophilicity of the Two Sulfur Atoms in 1,5-Dithioglucopyranoside", *Angewandte Chemie, International Edition in English*, 36(8), pp. 868-870, 1997) is maintained for reasons of record.

Yuasa et al. disclose compounds which meet the limitations of that instantly claimed in claim 18 wherein  $R^{21-24}$  are acetyl groups,  $R^{25-26}$  are H, and  $R^{27}$  is halogen. See compound 2x on page 869 wherein X is F or Cl.

It is noted that applicants amended the claim to delimit  $R^{25}$  from being halogen, however, since  $R^{26}$  or  $R^{27}$  can still be halogen, this species is still seen to anticipate the claimed genus and the rejection is maintained.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-5, 7-11, 13, and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 01/74834.

The claims of the instant application are drawn to 5-thio-glucopyranoside compounds and pharmaceutical compositions comprising the same.

The '834 document discloses compounds having the same core, but have an oxygen in the sugar ring whereas the instant compounds comprise a sulfur in the sugar ring. See abstract for

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example, which discloses substituted aryl groups linked to another substituted aryl group linked to a sugar moiety.

However, the substitution of sulfur for oxygen is seen to be obvious absent unexpected results. Sulfur and oxygen are known ring equivalents and bioisosteres of each other, and compounds only differing in the substitution of one for the other would be expected to have the same properties, and thus produce the same results. As such, it would be obvious to replace the O in the ring of the '834 patents compounds with S to produce the compounds instantly claimed as substitution of O for S is known to be an obvious modification. See Silverman et al. for a discussion on bioisosteres.

Claims 1-4, 6-8, 12, 13, and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP0 850,948.

The claims of the instant application are drawn to 5-thio-glucopyranoside compounds and pharmaceutical compositions comprising the same.

The '948 document discloses compounds having the same core, but have an oxygen in the sugar ring whereas the instant compounds comprise a sulfur in the sugar ring. See abstract for example, which discloses the same subgenus as set forth in the instant claim 12.

However, the substitution of sulfur for oxygen is seen to be obvious absent unexpected results. Sulfur and oxygen are known ring equivalents and bioisosteres of each other, and compounds only differing in the substitution of one for the other would be expected to have the same properties, and thus produce the same results. As such, it would be obvious to replace the O in the ring of the '834 patents compounds with S to produce the compounds instantly claimed as

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substitution of O for S is known to be an obvious modification. See Silverman et al. for a discussion on bioisosteres.

### ***Conclusion***

Applicant's submission of an information disclosure statement under 37 CFR 1.97(c) with the fee set forth in 37 CFR 1.17(p) on 4/16/2007 prompted the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 609.04(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Traviss C. McIntosh whose telephone number is 571-272-0657. The examiner can normally be reached on M-F 9:30-6:00.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shaojia A. Jiang can be reached on 571-272-0627. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Traviss McIntosh  
August 3, 2007

Shaojia A. Jiang  
Supervisory Patent Examiner  
Art Unit 1623

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